Demonstration of Potential Grazing Impact to Water Quality in the Western United States

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Key Words: grazing, grazing impacts, water quality, grazing impact model

Grazing is a widespread stressor on ecosystems in the western United States. As part of the EPA's Western Environmental Monitoring and Assessment Program (EMAP), the potential for grazing impacts to surface water quality was modeled using commonly available data in a Geographic Information System (GIS). Inputs to the model are derived from four sources: land cover from the National Land Cover Dataset (NLCD), land ownership from the National Atlas, distance-to-water from the National Hydrography Dataset (NHD; 1:100,000 scale,) and topographic position from the National Elevation Dataset (NED). The model uses 30 meter grid cells for input, analysis, and output. The input grids to the model have their values scaled to a range of 0 (not possible to graze) to 10 (most likely to be grazed). The potential grazing impact model operates by multiplying each of the four input grids together to determine a value between 0 and 10,000 for each cell. The areas with the highest potential for water quality impacts due to grazing are flat, non-protected, grasslands that are within 90 meters of a water source. Maps of potential grazing impact for Oregon and the Central Valley of California, along with maps of the model input layers, are included on the poster as a demonstration.